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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------------|-------------|----------------------|---------------------|------------------|
| 10/629,232 | 07/28/2003 | Hsich Kun Lee | | 6566 |
| 25859 | 7590 | 03/08/2006 | | EXAMINER |
| WEI TE CHUNG | | | | WRIGHT, INGRID D |
| FOXCONN INTERNATIONAL, INC. | | | | |
| 1650 MEMOREX DRIVE | | | ART UNIT | PAPER NUMBER |
| SANTA CLARA, CA 95050 | | | 2835 | |

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|-----------------|--------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/629,232 | LEE ET AL. | |
| | Examiner | Art Unit | |
| | Ingrid Wright | 2835 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 9/28/05, 11/3/05.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-7 and 9-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-7 and 9-16 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 28 July 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|---|--|
| <ol style="list-style-type: none"> 1)<input type="checkbox"/> Notice of References Cited (PTO-892) 2)<input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3)<input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____. | <ol style="list-style-type: none"> 4)<input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____. 5)<input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6)<input type="checkbox"/> Other: _____. |
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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 & 9-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bright (US PN 5833472) in view of Katsui (US PN 6487079 B2), further in view of Perugini et al. US 5396402.

With respect to claims 1 & 12, Bright teaches (Fig. 3) a printed circuit board (8) having an electronic package (2); a retention module (30) surrounding the electronic package (2), the retention module (30) being integrally formed and defining two positioning holes (33) at symmetrically opposite sides of a center thereof two pins (12) positioned and welded (via soldering) to the printed circuit board (8); a heat sink (50) (Column 2, Lines 63-63 & Column 4, Lines 1-3, 7-11).

Bright does not teach a clip cooperating with the retention module to press the heat sink against the electronic package and instead, teaches the use of screw fasteners (80) to press the heat sink (50) against the package (2) and a heat sink received in an opening of a retention module.

Katsui teaches (Fig. 1,4B) a clip (60,62) cooperating with the retention module (30B, 31') to secure a heat sink (50) to the retention module (30B, 31') and press the heat sink (50) against the integrated circuit package (20,21), in order to allow the heat sink (50) to be removed efficiently from a printed circuit board (10) (Column 7, Lines 26-28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to secure the heat sink to the retention module of Bright with the clip as taught by Katsui, instead of screws, in order to have an alternate equivalent means of retention and for allowing a more quick and efficient means of removing the heat sink from the printed circuit board.

As to the opening, Perugini et al. teaches an opening of a retention module (38), in which a heat sink (32) is received at a top surface of the opening.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the retention module of Perugini et al., in the invention of Bright, in order to attach a heat sink to a integrated circuit (see, Abstract of Perugini et al.).

With respect to claim 2, Bright teaches (Fig. 3) a pair of locating holes (9) corresponding to the positioning holes (33) of the retention module (30), and the pins (12) are welded into the locating holes (9) (Column 4, Lines, 8-11).

With respect to claim 3, Bright teaches a pin comprising (Fig. 3) a blocking portion, welding portion and a connecting portion that is comprised of a recess (inner diameter of element (12)) of the pin (12) and element (80). Each of said portions sequentially have successive reduced diameters. The blocking portions (top surface of element (17)) abut against the retention module, the connecting portions (element (80) in recess of element (12)) are lodged in the positioning holes (33) and the welding portions (18) are welded into the locating holes (9) of the printed circuit board (8) (Column 4, Lines 1-11).

With respect to claim 4, Katsui teaches (Fig. 3,4B) a clip (70,62) that comprises a pressing portion (62C) to press a heat sink (50) against the electronic package (21), and a pair of clamping portions (62B) engaging with the retention module (31B, 31') (Column 7, Lines 37-50).

It would have been obvious to one of ordinary skill in the art to use a clip in the device of Bright as stated above, and further for the clip to have pressing and clamping portions as a means of securing the heat sink against the package.

With respect to claim 5, Katsui teaches (Fig. 1) standoff portions (30B) extending from retention module (30) to isolate the module from the printed circuit board.

Bright does not appear to teach separate standoffs in addition to the pins (12). The pins (12) do, however, act as standoffs to separate the module from the printed circuit board.

It would have been obvious to one of ordinary skill in the art to use the standoff portions of the retention module of Katsui in the retention module of Bright to allow for more effective cooling of the device as taught by Katsui.

With respect to claim 6, Katsui teaches (Fig. 4B) a clip (62), the clamping portions (62B) extend from respective opposite sides of the pressing portion (62C) toward the printed circuit board (11), and the clamping portions (62B) form distal hooks engagingly clasping the retention module (31') (Column 7, Lines 37-50).

Katsui does not teach a clip made of plastic.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the clip out of a known material such as plastic, in order to use a material that is well known and readily available.

With respect to claim 7, Katsui teaches (Fig. 4B) a pair of catches (31D) integrally formed outwardly from the retention module (31') at diagonally opposite corners thereof respectively, the catches (31D) engaging with the clamping portions (62B) of the clip (62) (Column 7, 37-44).

With respect to claim 9, Katsui teaches (Fig. 4B) a pair of symmetrical catches (31D) integrally formed outwardly from opposite sides of the retention module (31'), the catches (31D) engaging with the clamping portions (62B) of the clip (62) (Column 7, Lines 37-44).

With respect to claim 10, Bright teaches (Fig. 3) a printed circuit board (8) having an electronic package (2) and a heat sink (50) as stated in the above rejections to claim 1 & 9.

Bright does not teach a clip comprising an operating portion that defines a slot.

Katsui does not teach a clip comprising an operating portion that defines a slot.

Perugini et al. teaches (Fig. 3) an operating portion that defines a slot (53) and the slots (53) engagingly receive the catches (43) of a socket (40) (Column 3, Lines 18-22).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the clip of Bright, as modified by Katsui, with the operation portion, defining slots of the clip, as taught by Perugini et al. The slots would secure the heat sink, clip and integrated circuit and socket assembly (Column 3, Lines 18-22) more securely than the clip of Katsui and still allow for removal of the clip.

With respect to claim 11, Katsui teaches (Fig. 1) a retention module (30B) substantially rectangular, and the two positioning holes (located through structure of element (30B)) defined in diagonally opposite corners of the retention module (30B) (Column 4, Lines 44-53).

With respect to claim 13, Bright teaches (Fig. 3) pins (12) disposed at symmetrically opposite sides of a center of the retention module (30) (Column 3, Lines 66-67 & Column 4, Lines 1-3).

With respect to claim 14, Bright teaches (Fig. 3) pins (12) integrally formed (in conjunction with element (80) located in recess of element (12)) from a portion of the retention module (30) facing the printed circuit board.

With respect to claim 15, Bright teaches (Fig. 3) positioning holes (33) defined in the retention module (30), first ends of the pins (12) (in conjunction with element (80) located in recess of element (12)) are interferentially received in the positioning holes (33), and opposite second ends (element (18) of element (12)) of the pins (12) are welded (via solder) to the printed circuit board (8).

With respect to claim 16, Bright teaches a printed circuit board (8) having an electronic package (20) located thereon and a plurality of through holes (9) therein, a retention module (30) surrounding an electronic package (20), a heat sink (50) defining a plurality of slots and pins (12) in a retention module (30) with four corners.

Bright does not teach a heat sink received in an opening of a retention module.

Katsui does not teach pressing bars extending through corresponding slots or a heat a heat sink received in an opening of a retention module.

Pergugini et al. teaches (Fig. 3) a clip (44) defining a rectangular frame like configuration with at least two pressing bars (46) extending through the corresponding slots (64) in a parallel

relationship and two pairs of locking devices (43,53) located at two opposite sides of the clip (44), which are perpendicular to the pressing bars (46), and respectively latchably engaged with two opposite sides of a base (40) each of which is vertically aligned with the corresponding side of the clip (44) (Column 3, Lines 18-22).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the clip of Bright as modified by Katsui, with the clip of Perugini including the slots, in order to press the heat sink against the electronic package and secure the heat sink to the retention module.

As to the opening, Perugini et al. teaches an opening of a retention module (38), in which a heat sink (32) is received at a top surface of the opening.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the retention module of Perugini et al., in the invention of Bright, in order to attach a heat sink to a integrated circuit (see, Abstract of Perugini et al.).

Response to Arguments

2. Applicant's argument with respect to claims 1-7 & 9-16 have been considered, but are moot in view of the new ground (s) of rejection. As indicated above, Bright teaches a heat sink assembly, but lacks a retention module with a clip and an opening. Katsui teaches a retention module (30b,31') with a clip (60,62) and Peruguni et al. teaches an opening (see, opening shown in fig. 1) in a retention module (38). Bright in view of Katsui & further in view of Perugini et al., teaches all the limitations of claims 1-7 & 9-16.

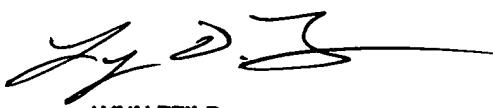
3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ingrid Wright whose telephone number is (571)272-8392. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on (571)272-2800, ext 35. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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